



115

SEQUENCE LISTING

<1> Frank, Dara W.
Wiener-Kronish, Jeannine
Yahr, Timothy L.
Sawa, Teiji
Fritz, Robert B.

<120> Method of and compositions for immunization with the
pseudomonas V antigen

<130> 650053.91487

<140> 09/770,916

<141> 2001-01-26

<150> 09/448,339

<151> 1999-11-23

<150> 60/109,952

<151> 1998-11-25

<150> 60/126,794

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Phe Cys Leu Val Thr Phe Pro Ser Cys Val Leu Ser Gln Val Gln Leu

10

15

20

aag cag tca gga cct ggc cta gtg cag ccc tca cag agc ctg tcc atc 149

Lys Gln Ser Gly Pro Gly Leu Val Gln Pro Ser Gln Ser Leu Ser Ile

25

30

35

acc tgc aca gtc tct ggt ttc tca tta act agc tat ggt gta cac tgg 197

Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ser Tyr Gly Val His Trp

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gtt cgt cag tct cca gga aag ggt ctg gag tgg ctg gga gtg ata tgg				245
Val Arg Gln Ser Pro Gly Lys Gly Leu Glu Trp Leu Gly Val Ile Trp				
	60	65	70	
agt ggt gga gac aca gac tat aat gca gct ttc ata tcc aga ctg agc				293
Ser Gly Gly Asp Thr Asp Tyr Asn Ala Ala Phe Ile Ser Arg Leu Ser				
	75	80	85	
atc agc aag gac aat tcc aag agc caa ctc ttc ttt aaa atg aac agt				341
Ile Ser Lys Asp Asn Ser Lys Ser Gln Leu Phe Phe Lys Met Asn Ser				
	90	95	100	
ctg cga gct act gac aca gcc ata tat tac tgt gcc aga aat aga ggg				389
Leu Arg Ala Thr Asp Thr Ala Ile Tyr Tyr Cys Ala Arg Asn Arg Gly				
	105	110	115	
gat att tac tat gat ttc act tat gcc atg gac tac tgg ggt caa gga				437
Asp Ile Tyr Tyr Asp Phe Thr Tyr Ala Met Asp Tyr Trp Gly Gln Gly				
	120	125	130	135
acc tca gtc acc gtc tcc tca gcc aaa aca aca ccc cca tca gtc tat				485
Thr Ser Val Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Tyr				
	140	145	150	
cca ctg gcc cct ggg tgt gga gat aca act ggt tcc tcc gtg act ctg				533
Pro Leu Ala Pro Gly Cys Gly Asp Thr Thr Gly Ser Ser Val Thr Leu				
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gga tgc ctg gtc aag ggc tac ttc cct gag tca gtg act gtg act tgg				581
Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Ser Val Thr Val Thr Trp				
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aac tct gga tcc ctg tcc agc agt gtg cac acc ttc cca gct ctc ctg				629
Asn Ser Gly Ser Leu Ser Ser Ser Val His Thr Phe Pro Ala Leu Leu				
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cag tct gga ctc tac act atg agc agc tca gtg act gtc ccc tcc agc				677
Gln Ser Gly Leu Tyr Thr Met Ser Ser Ser Val Thr Val Pro Ser Ser				
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acc tgg cca agt cag acc gtc acc tgc agc gtt gct cac cca gcc agc				725
Thr Trp Pro Ser Gln Thr Val Thr Cys Ser Val Ala His Pro Ala Ser				
	220	225	230	
agc acc acg gtg gac aaa aaa ctt gag ccc agc ggg ccc att tca aca				773
Ser Thr Thr Val Asp Lys Lys Leu Glu Pro Ser Gly Pro Ile Ser Thr				

235	240	245	
atc aac ccc tgt cct cca tgc aag gag tgt cac aaa tgc cca gct cct			821
Ile Asn Pro Cys Pro Pro Cys Lys Glu Cys His Lys Cys Pro Ala Pro			
250	255	260	
aac ctc gag ggt gga cca tcc gtc ttc atc ttc cct cca aat atc aag			869
Asn Leu Glu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Asn Ile Lys			
265	270	275	
gat gta ctc atg atc tcc ctg aca ccc aag gtc acg tgt gtg gtg gtg			917
Asp Val Leu Met Ile Ser Leu Thr Pro Lys Val Thr Cys Val Val Val			
280	285	290	295
gat gtg agc gag gat gac cca gac gtc cag atc agc tgg ttt gtg aac			965
Asp Val Ser Glu Asp Asp Pro Asp Val Gln Ile Ser Trp Phe Val Asn			
300	305	310	
aac gtg gaa gta cac aca gct cag aca caa acc cat aga gag gat tac			1013
Asn Val Glu Val His Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr			
315	320	325	
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tgg atg agt ggc aag gag ttc aaa tgc aag gtc aac aac aaa gac ctc			1109
Trp Met Ser Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu			
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Pro Ser Pro Ile Glu Arg Thr Ile Ser Lys Ile Lys Gly Leu Val Arg			
360	365	370	375
gct cca caa gta tac atc ttg ccg cca cca gca gag cag ttg tcc agg			1205
Ala Pro Gln Val Tyr Ile Leu Pro Pro Pro Ala Glu Gln Leu Ser Arg			
380	385	390	
aaa gat gtc agt ctc act tgc ctg gtc gtg ggc ttc aac cct gga gac			1253
Lys Asp Val Ser Leu Thr Cys Leu Val Val Gly Phe Asn Pro Gly Asp			
395	400	405	
atc agt gtg gag tgg acc agc aat ggg cat aca gag gag aac tac aag			1301
Ile Ser Val Glu Trp Thr Ser Asn Gly His Thr Glu Glu Asn Tyr Lys			
410	415	420	
gac acc gca cca gtc ctg gac tct gac ggt tct tac ttc ata tat agc			1349
Asp Thr Ala Pro Val Leu Asp Ser Asp Gly Ser Tyr Phe Ile Tyr Ser			

425

430

435

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 Lys Leu Asn Met Lys Thr Ser Lys Trp Glu Lys Thr Asp Ser Phe Ser
 440 445 450 455

tgc aac gtg aga cac gag ggt ctg aaa aat tac tac ctg aag aag acc 1445
 Cys Asn Val Arg His Glu Gly Leu Lys Asn Tyr Tyr Leu Lys Lys Thr
 460 465 470

atc tcc cgg tct ccg ggt aaa tgagctcagc acccacaag ctctcaggtc 1496
 Ile Ser Arg Ser Pro Gly Lys

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Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
 35 40 45

Thr Ser Tyr Gly Val His Trp Val Arg Gln Ser Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Leu Gly Val Ile Trp Ser Gly Gly Asp Thr Asp Tyr Asn Ala
 65 70 75 80

Ala Phe Ile Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln
 85 90 95

Leu Phe Phe Lys Met Asn Ser Leu Arg Ala Thr Asp Thr Ala Ile Tyr
 100 105 110

Tyr Cys Ala Arg Asn Arg Gly Asp Ile Tyr Tyr Asp Phe Thr Tyr Ala
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 130 135 140

Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly Asp Thr
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Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro
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Glu Ser Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser Ser Val
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His Thr Phe Pro Ala Leu Leu Gln Ser Gly Leu Tyr Thr Met Ser Ser
 195 200 205

Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val Thr Cys
 210 215 220

Ser Val Ala His Pro Ala Ser Ser Thr Thr Val Asp Lys Lys Leu Glu
 225 230 235 240

Pro Ser Gly Pro Ile Ser Thr Ile Asn Pro Cys Pro Pro Cys Lys Glu
 245 250 255

Cys His Lys Cys Pro Ala Pro Asn Leu Glu Gly Gly Pro Ser Val Phe
 260 265 270

Ile Phe Pro Pro Asn Ile Lys Asp Val Leu Met Ile Ser Leu Thr Pro
 275 280 285

Lys Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val
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Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala Gln Thr
 305 310 315 320

Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Ile Arg Val Val Ser Thr
 325 330 335

Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys Cys
 340 345 350

Lys Val Asn Asn Lys Asp Leu Pro Ser Pro Ile Glu Arg Thr Ile Ser
 355 360 365

Lys Ile Lys Gly Leu Val Arg Ala Pro Gln Val Tyr Ile Leu Pro Pro
 370 375 380

Pro Ala Glu Gln Leu Ser Arg Lys Asp Val Ser Leu Thr Cys Leu Val
385 390 395 400

Val Gly Phe Asn Pro Gly Asp Ile Ser Val Glu Trp Thr Ser Asn Gly
405 410 415

His Thr Glu Glu Asn Tyr Lys Asp Thr Ala Pro Val Leu Asp Ser Asp
420 425 430

Gly Ser Tyr Phe Ile Tyr Ser Lys Leu Asn Met Lys Thr Ser Lys Trp
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 Thr Gln Val Leu Ala Leu Leu Leu Leu Trp Leu Thr Gly Ala Arg Cys
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gac atc cag atg act cag tct cca gcc tcc cta tct gca tct gtg gga 151
 Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
 25 30 35

gaa act gtc acc atc aca tgt cga gca agt ggg aat att caa aat tat 199
 Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Gly Asn Ile Gln Asn Tyr
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tta gca tgg tat cag cag aca cag gga aaa tct cct cag ctc ctg gtc 247
 Leu Ala Trp Tyr Gln Gln Thr Gln Gly Lys Ser Pro Gln Leu Leu Val
 55 60 65

tat tct gca aaa acc tta gca gat ggt gtg cca tca agg ttc agt ggc 295
 Tyr Ser Ala Lys Thr Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly

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Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Pro			
85	90	95	100
gaa gat ttt ggg agt tat tac tgt caa cat ttt tgg agt act ccg tac			391
Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Ser Thr Pro Tyr			
105	110		115
acg ttc gga ggg ggg acc aag ctg gaa ata aaa cgg gct gat gct gca			439
Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Ala Asp Ala Ala			
120	125		130
cca act gta tcc atc ttc cca cca tcc agt gag cag tta aca tct gga			487
Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln Leu Thr Ser Gly			
135	140		145
ggt gcc tca gtc gtg tgc ttc ttg aac aac ttc tac ccc aaa gac atc			535
Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr Pro Lys Asp Ile			
150	155		160
aat gtc aag tgg aag att gat ggc agt gaa cga caa aat ggc gtc ctg			583
Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln Asn Gly Val Leu			
165	170	175	180
aac agt tgg act gat cag gac agc aaa gac agc acc tac agc atg agc			631
Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser Met Ser			
185	190		195
agc acc ctc acg ttg acc aag gac gag tat gaa cga cat aac agc tat			679
Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg His Asn Ser Tyr			
200	205		210
acc tgt gag gcc act cac aag aca tca act tca ccc att gtc aag agc			727
Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro Ile Val Lys Ser			
215	220		225
ttc aac agg aat gag tgt tagagacaaa ggtcctgaga cgccaccacc			775
Phe Asn Arg Asn Glu Cys			
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Ala Ser Val Gly Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Gly Asn
35 40 45

Ile Gln Asn Tyr Leu Ala Trp Tyr Gln Gln Thr Gln Gly Lys Ser Pro
50 55 60

Gln Leu Leu Val Tyr Ser Ala Lys Thr Leu Ala Asp Gly Val Pro Ser
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn
85 90 95

Ser Leu Gln Pro Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp
100 105 110

Ser Thr Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln
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Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr
145 150 155 160

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln
165 170 175

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr
180 185 190

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg
195 200 205

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro
210 215 220

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225 230